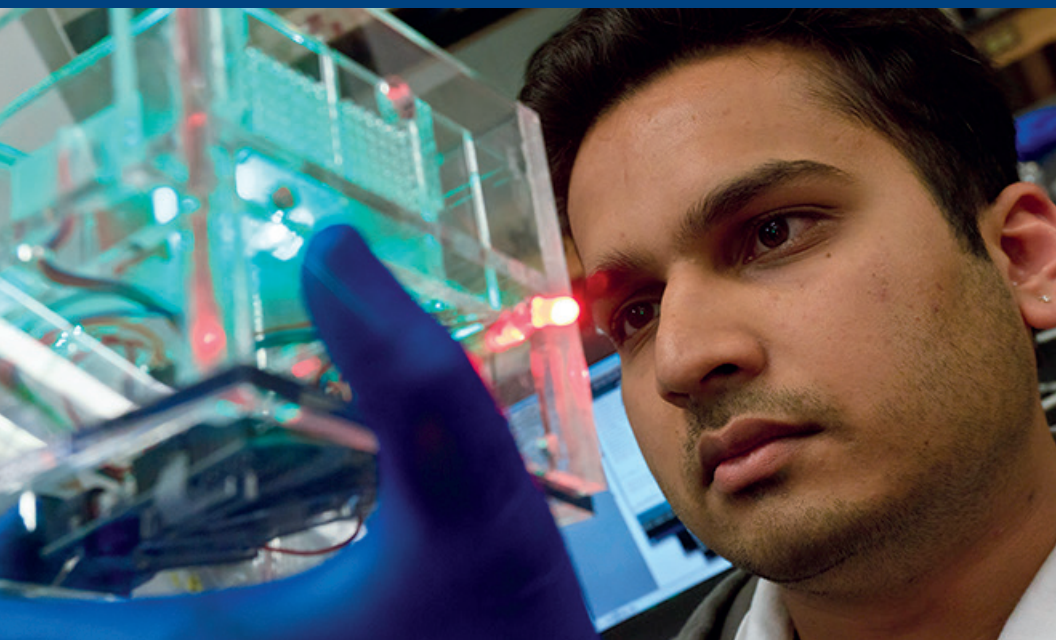
GRADUATE PROGRAM

Engineering with a Concentration in Materials and Manufacturing Technology

http://engineering.uci.edu/interdisciplinary-graduate-programs/materials-and-manufacturing-technology



Materials and manufacturing technology is concerned with the generation and application of knowledge related to the complex interplay of processing, structural evolution, properties and performance of materials and manufactured products. MMT has become a key component of engineering education, partly because of the sophistication required to engineer materials in a rapidly changing technological landscape, and partly because the selection of materials has become an integral part of almost every modern engineering design. The recent development of novel manufacturing technologies (e.g., additive manufacturing) and the rapid insertion of computer science (e.g., artificial intelligence) in the manufacturing process are revolutionizing the way we think about making products. Being at the forefront of this manufacturing revolution requires deep knowledge of basic engineering and scientific principles, including crystal structure, thermodynamics and kinetics of materials, heat transfer, diffusion, solid state physics and chemistry, manufacturing technologies, machine learning, design and modeling techniques, and structural and functional materials properties.

HIGHLIGHTS

- Schoolwide interdisciplinary program
- Integration of materials and manufacturing processes
- Broad choice of courses

RESEARCH FOCUS AREAS

- Additive Manufacturing
- Nanostructured Materials
- Biomedical Materials and Devices
- Electronic and Photonic Materials and Devices

AFFILIATED FACILITIES

- Institute for Design and Manufacturing Innovation
- Irvine Materials Research Institute
- Integrated Nanosystems Research Facility
- Bio-Organic Nanofabrication Lab

DEGREES OFFERED

M.S. & Ph.D.

RECOMMENDED BACKGROUND

Given the nature of materials and manufacturing technology as an interdisciplinary program, students with a background and suitable training in either materials, engineering (biomedical, civil, chemical, electrical and mechanical), or the physical sciences (physics, chemistry, geology) are encouraged to participate. Recommended background courses include an introduction to materials, thermodynamics, mechanical properties and electrical/optical/magnetic properties. A student with an insufficient background may be required to take remedial undergraduate courses following matriculation as a graduate student.

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